

Characteristics of Light and the Electromagnetic Spectrum Activity

Name: _____

Answer all questions completely and show all work for calculations.

1. List the components of the electromagnetic spectrum in order of increasing wavelength. Come up with a mnemonic device to remember these in order.
2. What is the wavelength, in nanometers, of a light wave with a frequency of $4.84 \times 10^{14} \text{ Hz}$? What color of light is this?
($1 \text{ m} = 1 \times 10^9 \text{ nm}$)
3. What is the frequency of an x-ray with a wavelength of 10 nm ? ($1 \text{ m} = 1 \times 10^9 \text{ nm}$)
4. What is the wavelength of a radio wave if the station is 104.5 ? ($1 \text{ MHz} = 1 \times 10^6 \text{ Hz}$)
5. What is the frequency of an infrared (IR) wave if its wavelength is 0.55 mm ? ($1000 \text{ mm} = 1 \text{ m}$)
6. The frequency listed on the back of a microwave oven is 2450 MHz . What is the wavelength of microwaves coming from this microwave oven?
($1 \text{ MHz} = 1 \times 10^6 \text{ Hz}$)
7. What happens to the wavelength of electromagnetic waves as their frequency increases? What happens to their speed? What happens to their energy? (*Assume they are traveling in a vacuum*)
8. Compare and contrast the wavelength, frequency, and amplitude of wave A and B. How do these waves compare/contrast in terms of speed, brightness, and type?

